

REMARKS

Claims 1, 3-10, 13-15, 17, 19, 20,22, 24, 25, 40-50, and 53-57 are pending in this application. By this Amendment, claims 1, 6, 7, 9, 10, 17, and 22 are amended. Support for the claim amendments can be found throughout the specification, for example at p. 8, line 21 to p. 9, line 6, p. 42, lines 20-24, and Fig. 2(b). No new matter is added.

I. Allowable Subject Matter

Applicants appreciate the indication that claims 19, 20, 24, and 25 contain allowable subject matter.

II. Request for Personal Interview

Applicants hereby request a personal interview with the Examiner prior to further examination of the application in order to develop and clarify specific issues raised in the April 20, 2005, Office Action, and addressed in this Amendment. The Examiner is requested to contact Applicants' representatives at the number listed below in order to schedule the personal interview.

III. Rejection

The Office Action rejects claims 1, 3-10, 13-15, 17, 22, 40-50, and 53-57 under 35 U.S.C. §103(a) as having been obvious over US 011 (U.S. Patent No. 3,783,011 to Chauffourneaux). Applicants respectfully traverse the rejection.

A. US 011 does not teach or suggest every feature of claim 1

US 011 does not teach or suggest a step of sealing the closed space, or the step of bringing the closed space to a saturated sublimation pressure state of the organic compound and maintaining the closed space at a constant temperature to maintain the saturated sublimation pressure state of the organic compound, as required by claim 1.

As illustrated in Fig. 2(b) of the specification, claim 1 requires that the molded resin article (which is to have its surface layer modified) and the organic compound are placed into

a closed space, and that the closed space is then sealed. See the specification at p. 42, lines 20-24. As illustrated in Fig. 3 and explained at page 43, lines 18-20, claim 1 further requires that the closed, sealed space (and thus the article and organic compound contained therein), are kept at a constant temperature.

US 011 is directed to a method protecting plastics from photodegradation. In a first step, US 011 discloses heating a vapor to a temperature between 100°C and 260°C in a liquid bath. See col. 2, lines 58-61. In a second step, US 011 discloses circulating the heated vapor into a treatment enclosure containing the plastic surface. See col. 3, lines 22-24. US 011 further discloses that the plastic surface is introduced into and taken out of the treatment enclosure. See col. 3, lines 7-10.

Although in Example 1 US 011 discloses that the treatment enclosure includes a thermostat set at 66°C (see col. 4, lines 23-24), the thermostat cannot keep the treatment enclosure at a constant temperature and the treatment enclosure cannot be sealed, as required by claim 1. Specifically, the circulation of the heated vapor into the treatment enclosure will necessarily result in an increased temperature, and the insertion and removal of the plastic surface will necessarily result in a decreased temperature, of the treatment enclosure. Furthermore, the circulation of the vapor and the insertion/removal of the plastic surface requires that the treatment enclosure is not sealed.

Thus, US 011 fails to teach or suggest a step of sealing the closed space, and a step of bringing the closed space to a saturated sublimation pressure state of the organic compound and maintaining the closed space at a constant temperature to maintain the saturated sublimation pressure state of the organic compound, as required by claim 1. In fact, one skilled in the art would interpret US 011's disclosure as teaching away from sealing the closed space and maintaining the treatment enclosure at a constant temperature, as US 011 requires

activities that necessarily result in a change in temperature and an unsealed treatment enclosure.

B. US 011 does not teach or suggest every feature of claims 17 and 22

US 011 does not teach or suggest the sealed container or the single heating means required by claims 17 and 22.

Claims 17 and 22 require a sealed container containing an organic compound/dyestuff having sublimation properties and an affinity for a resin of a molded resin article to be coated/colored and the molded resin article. See the specification at p. 42, lines 20-24, and Fig. 2(b). In contrast, US 011 requires an unsealed treatment enclosure so that the vapor can be circulated into the treatment enclosure, and so that the plastic surface is introduced into and taken out of the treatment enclosure. See col. 2, lines 58-61, col. 3, lines 22-24, and col. 3, lines 7-10. Thus, US 011 fails to teach or suggest a sealed container, as required by claims 17 and 22. In fact, one skilled in the art would interpret US 011's disclosure as teaching away from a sealed enclosure, as US 011 requires an unsealed enclosure.

Claims 17 and 22 require a single heating means for sublimating the organic compound/dye stuff, for depositing the vapor of the organic compound/dyestuff on the surface of the molded resin article, and for allowing the organic compound/dyestuff to penetrate/disperse into the molded resin article. See the specification at p. 45, lines 7-10. In contrast, US 011 requires that the organic compound is sublimated by a first heating means (a liquid bath), and that the vapor is deposited on the article by a second heating means (a treatment enclosure containing a thermostat). See col. 2, lines 58-61, col. 3, lines 22-24, and Example 1. Thus, US 011 fails to teach or suggest a single heating means, as required by claims 17 and 22. In fact, one skilled in the art would interpret US 011's disclosure as teaching away from a single heating means, as US 011 requires multiple heating means.

C. US 011 fails to teach or suggest the claimed saturation sublimation pressure state

US 011 does not teach or suggest the claimed saturation sublimation pressure state, or the benefits associated with such as state.

The specification discloses that in conventional vapor deposition methods, the temperature of the vapor deposition source is set to be higher than the temperature of the article to be treated. See the specification at p. 4, lines 19-23. The specification defines these conventional vapor deposition methods as non-equilibrium state methods, and discloses that it is difficult to obtain uniform thickness of the vapor film on the article under such non-equilibrium conditions. See p. 5, lines 5-7.

The specification discloses that the claimed saturated sublimation pressure state overcomes the deficiencies of conventional vapor deposition methods. In particular, at a saturated sublimation pressure state, the vapor deposition of the organic compound is maintained at a constant temperature consistent with the temperature of the substrate, under a constant pressure. See the specification at p. 8, line 21 to p. 9, line 6. As discussed above, conventional vapor deposition methods first heat the organic compound to a first temperature that is higher than the temperature of the article.

US 011 is directed to a method protecting plastics from photodegradation using a conventional vapor deposition method. In a first step, US 011 discloses heating a vapor to a temperature between 100°C and 260°C in a liquid bath. See col. 2, lines 58-61. In a second step, US 011 discloses introducing the heated vapor into a treatment enclosure containing the article to be treated. See col. 3, lines 22-24. US 011 further discloses that the article can be preheated at a temperature of about 50°C to 120°C, and discloses that the it is undesirable for the preheating temperature to be above the temperature of the treatment enclosure. See col. 3, lines 19-22.

US 011 expressly discloses a temperature range for the vapor in the liquid bath, but does not expressly disclose a temperature range for the treatment enclosure. Because US 011 discloses that it is undesirable for the preheating temperature to be above the temperature of the treatment enclosure, the Office Action presumes that the treatment enclosure can be in the range of about 50°C to 120°C, provided that the treatment enclosure temperature is above the preheating temperature. See, for example, Examples 1-7, which respectively disclose the following treatment enclosure temperatures: 66°C, 65°C, 110°C, 104°C, 102°C, 103°C, and 92°C.

Although the Office Action's presumed temperature range of the treatment enclosure overlaps with the temperature range of the liquid bath, the Office Action provides no motivation -- in the absence of the instant application -- for one skilled in the art to maintain the liquid bath (and thus the vapor heated therein) and the article at the same, constant temperature.

In fact, US 011 teaches away from the invention by requiring that the organic compound be heated at a higher temperature in a liquid bath, and by requiring the introduction and removal of the article from the treatment enclosure, rendering it difficult or impossible to maintain the vapor and the article at the same, constant temperature under a constant pressure. Furthermore, all of Examples 1-7 disclose using the liquid bath at a temperature that is higher than the temperature of the treatment enclosure. In addition, the only claims that address the temperature of the liquid bath as compared to the temperature of the treatment enclosure (i.e., claims 6 and 8) each requires the former to be higher than the latter.

For these reasons, the Office Action fails to establish a *prima facie* case of obviousness because US 011 fails to teach or suggest the claimed "saturation sublimation pressure state." However, even if the Office Action established a *prima facie* case of

obviousness (which it has not), a showing of unexpected results is sufficient to overcome a *prima facie* case of obviousness. See, for example, *In re Albrecht*, 514 F.2d 1389, 1396, (CCPA 1975), *In re Papesch*, 315 F.2d 381 (CCPA 1963) and MPEP §§716.02-716.02(g). As a supplement to the unexpected results disclosed in the specification, the attached Declaration also demonstrates the unexpected uniform deposition of the organic compound on the article resulting from the saturated sublimation pressure state.

Specifically, the attached Declaration discloses three separate experiments, each directly comparing articles prepared under saturated sublimation pressure state conditions with articles prepared under non-equilibrium conditions. In particular, the Declaration demonstrates that for articles prepared under saturated sublimation pressure state conditions, the vapor is uniformly deposited on the article. The Declaration further demonstrates that for articles prepared under non-equilibrium conditions, the vapor is not uniformly deposited.

The Office Action argues that the experiments are insufficient to demonstrate the unexpected results of the claimed saturated sublimation pressure state, because the experiments do not include a direct comparison of the claims with US 011. However, there is no requirement that unexpected results must be demonstrated by a direct comparison with a cited reference. Furthermore, the comparative examples used in the experiments are actually closer to the claims than US 011. In particular, each of the three comparative examples varies only slightly from the test samples in order to prohibit a saturated sublimation pressure state.

In contrast, US 011 varies greatly from the claims. For example, and as discussed above, US 011 requires the following actions, which are significantly different from the claims: (i) heating the vapor in a separate liquid bath, (ii) heating the vapor to a higher temperature than the article, (iii) cycling the vapor into the treatment enclosure, and (iv) introducing and withdrawing the article into and out of the treatment enclosure. Thus, the

comparative examples used in the experiments are sufficient to demonstrate the unexpected results associated with the claimed saturation sublimation pressure state.

D. Conclusion

For at least the reasons discussed above, US 011 fails to teach or suggest every feature of claims 1, 17, and 22. Accordingly, claims 1, 17, and 22 would not have been obvious over US 011, and are therefore patentable over US 011. Dependent claims 3-10, 13-15, 19, 20, 24, 25, and 40-50 depend from claims 1, 17, or 22, and include all of the features of their respective base claims. Accordingly, these dependent claims are patentable over US 011 for at least the same reasons as claims 1, 17, and 22. Reconsideration and withdrawal of the rejection are respectfully requested.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 3-10, 13-15, 17, 19, 20, 22, 24, 25, 40-50, and 53-57 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,


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JAO:PAC

Attachment:

Declaration Under 37 CFR §1.132 of T. Mizokuro

Date: September 20, 2005

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